by him, together with the executive committee of the Universities Bureau, were appointed to consider any matters of common interest arising out of the proceedings of the conference or submitted to it by the Government.

The title of the degree to be obtainable by students of the King's Dominions overseas or of foreign countries as the result of post-graduate work and research was discussed at considerable length, revealing a much higher degree of unanimity than seemed to be likely when the conference met a year ago.

It was recognised by the conference that the question of the title of a degree and the conditions under which it could be obtained were of far greater import than the influence which the degree might have in attracting graduate students to the United Kingdom. It involves the whole question of the function of universities in the modern world. In our own country the tradition still lingers that a university is a place of post-school education, whereas in the modern world there is greater need for the provision of highly trained men and women capable not merely of absorbing knowledge, but also of increasing the common stock. This position was well defined by Sir Ernest Rutherford, whose speech may be quoted as an epitome of the views of the conference:—

> It should be made clear that the new degree which many universities propose is an entire innovation. It will involve a full period of post-graduate training, introducing into Britain a system practically identical with that which obtains in America, and to a large extent in Canada also. It is of great importance that it should be adopted by the English-speaking world. In Britain it is likely to be a degree of very high standard, because we have the opportunity of building it on an honours basis. It is generally considered that the course should last for not less than two years, and this, I consider, is as it should be for a student who has already taken an honours degree, say in the first class, before he starts post-graduate work and investigation. If he shows promise and ability he will be able to take the M.A. in a year. We must also consider those who come to us from a distance, who will already in many cases have done a certain amount of research. It will be a real and very great departure in English education—the greatest revolution, in my opinion, of modern times. It is true that some universities have already attempted post-graduate training in a somewhat spasmodic manner. To carry out the scheme in its entirety will involve a much larger and more highly specialised staff and much more money for equipment.

NOTES.

We deeply regret to announce that Sir Alexander Pedler, F.R.S., died suddenly on Monday, May 13, at sixty-eight years of age, while attending a committee meeting at the Ministry of Munitions. Sir Alexander was formerly Vice-Chancellor of the University of Calcutta and Director of Public Instruction for Bengal. He retired in 1906, and since 1907 had been the honorary secretary of the British Science Guild, as well as an active member of many other public and scientific bodies.

We learn with great pleasure that Oliver Heaviside has been elected an honorary fellow of the American Institute of Electrical Engineers. He is the fifth honorary fellow, the others being Marconi, Ferranti, Blondel, and C. E. L. Brown. Heaviside has often contributed to our columns on scientific theory and on educational matters. He holds very strong views about the mathematical teaching that used to be given in our schools, and has little patience with concentration upon its logic and philosophy. In his own books he does not spare the reader, but makes him master his own peculiar nomenclature and notation before he can learn those principles of electromagnetic theory which he has developed so successfully, and some of which are of great importance to practical engineers. His books would have a far wider vogue if he had conformed more to conventional methods, but the value of his work would probably have suffered, and he would have lost much of the pleasure which he obviously felt in writing them. Standardisation has its uses, but it has also serious limitations. Many of us are grateful to Lodge, Perry, and Searle for explaining many of the good things in his books which we might otherwise have passed over. From the practical point of view Heaviside's most important discovery was the "distortionless" circuit for speech transmission and his suggestion of the use of inductance coils at intervals in long telephonic lines. This suggestion was taken up and developed by Pupin and other American electricians, and has been largely and most successfully utilised in many submarine telephone lines all over the world. We rejoice that our American *confrères* have done Oliver Heaviside honour; we thank them and offer to him our warmest congratulations.

The Pereira medal of the Pharmaceutical Society of Great Britain has been awarded to Miss H. C. M. Winch.

Lord Rothschild has been elected an honorary member of the Entomological Society of Spain, of which we recently noted the foundation.

The Decimal Association informs us that the Federation of British Industries, by a unanimous resolution of the executive council, has now given its support to the Decimal Coinage Bill which is before the House of Lords.

Mr. W. B. Randall, of Waltham Cross, has generously provided funds for the establishment of a new research post at the Rothamsted Experimental Station, and the committee has appointed Mrs. D. J. Matthews (formerly Miss Isgrove) to occupy it. Mrs. Matthews will devote herself to the study of some of the problems connected with soil sterilisation as it is now being carried out in certain types of nurseries.

The annual congress of the South-Eastern Union of Scientific Societies will be held at Burlington House on May 29–June 1, and will follow the usual lines. The president will be Sir Daniel Morris, who will deliver his address on the evening of Wednesday, May 29, when his subject will be "A Chapter in the Geographical Distribution of Plants." On Thursday evening, May 30, at 8 p.m., Sir Ronald Ross will open a discussion on mosquitoes in England.

The death is announced, on May 12, of Dr. R. G. Hebb, consulting physician and physician pathologist to Westminster Hospital, lecturer on pathology at Westminster Hospital Medical School, reader in morbid anatomy at the University of London, and editor of the Journal of the Royal Microscopical Society.

We regret to record the death at Newcastle-upon-Tyne on May 7 of Sir William Haswell Stephenson, aged eighty-two years. Sir William joined the Tyne Improvement Commission in 1878, and from 1900 until his death was chairman. It was during his long *régime* that the building of large ships became possible. He was an honorary D.C.L. of Durham University, and the honour of knighthood was conferred upon him in 1900.

The General Congress of Civil Engineering, which was held in Paris on April 18–23, proved an entire success. A total of 151 reports were printed and circulated to the members and discussed at the sessions of the congress. The sections of the congress were:—(1) Public Works and Civil Engineering, (2) Transport, (3) Mechanical Engineering, (4) Mining and Metallurgy, (5) Industrial Physics and Chemistry, (6) Industrial Electricity, (7) Rural Engineering and Agriculture, (8) Industrial Organisation, (9) Social Hygiene and Welfare, and (10) Industrial Legislation. In the economics section much attention was given to educational reform and to the future training of the worker and the engineer.

We have received a pamphlet entitled "Building Jerusalem" (from a line of the poet, William Blake), being the annual report of the National Council of Public Morals. It is noted that action has been taken on the recommendation of the council's national birth-rate commission in scheduling as a poison certain forms of lead which have been extensively used as abortifacients. During the past year a commission of inquiry on the physical, educational, and moral influence of the kinematograph has completed its labours and published a useful report. Valuable propaganda work has also been done for furthering the establishment of a Ministry of Health, and pamphlets for the troops and for the civil population on venereal disease have been issued together with other publications.

A number of further cases of the disease resembling botulism (see Nature, May 2, p. 170) have been reported in London and Birmingham. The epidemic has assumed sufficient proportions for the medical officer of the Local Government Board to issue a memorandum to health authorities describing the symptoms, etc., and the London County Council has decided to place at the disposal of medical practitioners in London the services of its medical staff for consultation. Considerable doubt exists as to the disease being botulism. So far we believe the *Bacillus botulinus* (the causative microbe of botulism) has not been isolated in connection with the present epidemic, which has also not been associated with any particular article of food. It is suggested that the disease may be a cerebral form of poliomyelitis, which in its spinal form occurs in epidemics and principally attacks children, causing infantile paralysis.

Sir Robert Hadfield has been for some years a strong advocate of the scheme for erecting a joint home for technical associations connected with the metal industry, including the Institute of Mining and Metallurgy, the Iron and Steel Institute, the Institute of Metals, and the Institution of Mining Engineers, none of which has at present adequate accommodation. It is estimated that the cost of a suitable building would amount to 400,000*l.* Besides providing a common meeting-place for the bodies concerned with the metal industry, the scheme would render possible a joint library, an advantage which has been strongly emphasised in the experience of the United Engineering Societies Building in New York. The council of the Iron and Steel Institute has approved the scheme, and it is probable that the Sheffield City Council, and possibly the Cutlers' Company and the Chamber of Commerce, will be invited to consider it.

A report has been issued summarising the work of the Industrial Reconstruction Council during the three months ending March 31. It will be recalled that the first public meeting of the council was held at the Guildhall on February 15, when representatives of a large number of trade unions and trade associations were present. Meetings have since been held in Bristol, Manchester, Edinburgh, and Nottingham, addresses being delivered by Lord Balfour of Burleigh, Mr. E. J. P. Benn, the Rt. Hon. Christopher Addison, the Rt. Hon. G. H. Roberts, Sir William McCormick, and others. Conferences have also been arranged with the officers of the Federation of British Industries, the Manufacturers' Section of the London Chamber of Commerce, and the Engineering Employers' Federation. The council emphasises the need for educational work amongst both employers and employees, and of increasing the number of lecturers and speakers who are willing to explain the principles of the Whitley report. It is hoped that branch organisations will shortly be established.

"Fisheries Notice No. 9," just issued by the Board of Agriculture and Fisheries, is a practical description of methods of eel-capture. The pamphlet is well illustrated, showing the details of construction of traps and weirs, and it includes a list of makers of the fishing gear mentioned. Copies may be obtained, free of charge and postage, on application to the Secretary, Board of Agriculture and Fisheries, 43 Parliament Street, London, S.W.1. The Fresh-water Fish Committee (54A Parliament Street) also issues a notice relative to the distribution of elvers for stocking lakes, reservoirs, farm-ponds, marsh drains and pools, and the upper parts of suitable river systems. It is estimated that 1000 elvers per acre is an adequate supply where eels are scarce. About three to four years are required before the elvers grow to marketable-sized eels. Full directions are given in the notice to which reference is made. The cost of the elvers is from 3*s.* 6*d.* per 1000 to 2*l.* 5*s.* per 20,000. These notices are deserving of wide publicity, and should be obtained by all persons who have control of suitable waters for rearing purposes.

A gang of riveters at the works of Messrs. Fraser and Fraser, Ltd., Bromley-by-Bow, celebrated *Lusitania* Day by creating a world's record in rivet-driving. The squad consisted of the riveter, Mr. R. Farrant, who used an Ingersoll-Rand "Little David" pneumatic riveter, weighing $28\frac{1}{2}$ lb., a holder-up using a hand-tool weighing 16 lb., and five other men or boys. The rivets were $\frac{1}{2}$ in. in diameter by $1\frac{1}{8}$ in. long. The following particulars—extracted from the *Engineer* for May 10—are of interest in showing the rates for different periods of the day:—

Time	Rivets driven	Rate per hour
6.30 a.m.	nil	—
7.30	536	536
8.30	1032	494
Half-hour interval.		
9.30 a.m.	1304	544
10.30	1823	519
11.30	2257	434
1.0 p.m.	2920	442
One-hour interval.		
2.30 p.m.	3100	360
3.30	3550	450
4.30	4007	457
5.0	4276	538

The average for the day of nine hours is one rivet per 7·58 second. The American record of 2720 rivets in nine hours, held by Charles Schock, has been beaten by 57 per cent., although it is only fair to say that full information is lacking regarding his performance, and hence strict comparison is not possible. A note in the *Times* of May 15 states that Farrant's record of 4276 rivets has been beaten by a workman in Messrs. Beardmore's yard at Dalmuir. Working the usual shift of nine hours on ship's plates, the man drove 4452 rivets, 176 more than Farrant's total.

THE first instalment of an interesting article on the Larderello natural steam power plant, by Ugo Funaioli, director of the electrical department of the Società Boracifera di Larderello, appears in *Engineering* for May 10. Reference has already been made in NATURE to the utilisation of volcanic heat in Tuscany, and the present article gives an account of the method employed in boring for steam. Heavy steel chisels are attached to a rigid system of iron rods, and the whole system is lifted by an electric winch and then released, the fall causing the chisel to penetrate the soil. Steam and water are found generally at a depth of 20 m., and the work from that point proceeds with increasing difficulty and requires specially trained workmen. Diameters of bore of 40 cm. have been attained, and experiments are being made to arrive at still larger diameters in order to augment the output of steam. The holes are lined with iron tubes so as to prevent crumbling of the sides, and the tubes are welded together with oxy-hydrogen flame; the oxygen and hydrogen required are produced locally by the electrolysis of water. When it is judged by signs known to the practised eye of the foreman that the hole has reached a sufficient depth, a curious operation termed locally "sfulminazione" (explosion) is sometimes performed, which clears the hole from all remaining *débris* and of the water which balances the pressure of the steam. A sort of rough piston is introduced into the hole, and is afterwards withdrawn as rapidly as possible by means of the electric winch. If all necessary conditions are fulfilled this provokes a small volcanic eruption, and the hole emits violently mud, stones, and boiling water. This eruption lasts for some minutes, and is followed by the steady emission of dry steam.

THE inaugural meeting of the Société de Chimie Industrielle was held recently at Paris under the presidency of M. Clémentel, Minister of Commerce, who was introduced by M. P. Kestner, president of the society. An important paper was read by M. Matignon on the problem of the production of synthetic ammonia before Haber. M. Matignon pointed out that the first steps in this direction were due to an English chemist, Perman, who showed in 1904 that the combination of nitrogen and hydrogen to form ammonia and its resolution into these elements form reversible reactions depending upon certain conditions of equilibrium. These conditions and the amount of ammonia producible thereunder were studied in the following year by Haber and one of his pupils, Van Ordt, and as a result of these studies a works for the annual production of 30,000 tons of ammonium sulphate was erected at Oppau, near Ludwigshafen. The first patent, however, bearing on this subject is dated so far back as July 11, 1865, being an English patent taken out by Dufresne in the name of Charles Tellier for the preparation of oxygen, in which he claims the utilisation of the nitrogen eliminated in his process by passing it over spongy iron heated to redness, and afterwards passing hydrogen over the combination of iron and nitrogen thus formed, when a large quantity of ammonia is at once generated. A French patent was taken out by Tessié du Motay in 1871 for similarly employing nitrides of titanium. In 1881 Charles Tellier took out further French and German patents for the production of ammonia from atmospheric nitrogen by means of iron and titaniferous iron. Further work in this direction was done by Ramsay and Young in 1884, and patents were taken out by Hlavati in Austria in 1895, and in France by the Christiania Minekompani in 1896, and again by M. Le Chatelier in 1901. Perman had, moreover, pointed out the effect of numerous metals as catalytic agents in the combination of nitrogen and hydrogen, also the advantage of employing high pressures. It would, therefore, appear probable that the monopoly of the rights in the production of synthetic ammonia, which the Badische Company lays claims to, is likely to be invalidated by the publication of the above list of patents.

IN an article entitled "Psychology in Relation to the War," in the *Psychological Review* for March last, Major R. M. Yerkes, of the United States Army, and president of the American Psychological Association, reports upon the organisation of American psychologists for military service during the year 1917. In April, 1917, twelve committees were appointed from the members of the American Psychological Association "to render the Government of the United States all possible assistance with psychological problems arising from the present military emergency." The subjects allotted to these various committees included the psychological examination of recruits, the selection of men for tasks requiring special aptitudes (*e.g.* artillery service, signalling, etc.), psychological problems of aviation, problems of "incapacity" (shell-shock, re-education, etc.), recreation in the Army and Navy, psychological and pedagogical problems of military training and discipline, and visual and acoustic problems in relation to military service. For obvious reasons a detailed report upon the later activities of some of these committees cannot be given, but the account of the work of the committee for the psychological examination of recruits well repays study. The purposes of the psychological tests applied were:—"(*a*) To aid in segregating the mentally incompetent; (*b*) to classify men according to their mental capacity; (*c*) to assist in selecting competent men for responsible positions." It is important to notice that of the number so tested, the lowest (10 per cent.) and the highest (5 per cent.) were subjected to a more searching individual examination, on the basis of which a report was made by the psychological examiner to the medical officer. As a result of an examination of 5000 officers and 80,000 men, the Medical Department recommended the extension of psychological examining to the entire Army. In December, 1917, this recommendation was approved by the General Staff, and the section of psychology in the Surgeon-General's Office is engaged in the preparation of a plan for this work. We are now informed that a division of psychologists has been organised, consisting of twenty-seven majors, fifty-two captains, and sixty-two lieutenants, with six hundred assistants.

Two forms of "Githathi," or magic stones, in use among the AKikuyu are described and figured by Mr. H. R. Tate in the Journal of the East Africa and Uganda Natural History Society, vol. vi., No. 12. The larger of these is circular, the smaller cylindrical, in shape, and both have been drilled through the centre. The use of such stones seems to have fallen into desuetude; but Mr. Tate has been able to show that they were used to invoke vengeance, or to obtain compensation for offences against tribal law. Mr. Hobley, some years ago, was fortunate enough to witness a trial by ordeal as practised among the Akamba of Kilima Njaro, in which one of these stones was actually used. In the same issue of this journal

Mr. C. M. Dobbs describes a small stone bowl found at the entrance to a cave in Sotik. None of the natives living in the neighbourhood had ever before seen such a bowl, and could offer no suggestions as to its probable use; hence it is evident that it is a relic of some extinct tribe, of which more may be discovered later. He also describes some remarkable circular holes found all through the district from the Nyando River to Sotik. Arranged in groups of from ten to twelve, each hole is provided with an entrance in the form of a long narrow passage. But there is nothing in the form either of the passage or of the pit itself to afford a clue as to the uses to which the excavations were put. By the present native population of the Lumbwa country they are said to have been made by a tribe called the Sirikwa, now, apparently, no longer in existence. The only other trace of this tribe now remaining exists in the form of fragments of red pottery of a type now unknown in the country. In placing these evidences of vanishing and vanished races on record, the society is doing some extremely valuable work.

IN the March issue of the *Journal of the Board of Agriculture* Messrs. E. S. Salmon and H. Wormald give an account of an experiment in the treatment of "covered smut" (*Ustilago hordei*) of barley. Seed from an affected crop was secured for the purpose, and separate portions of this were treated with copper sulphate (2½ per cent.), Bordeaux mixture, and formalin respectively, whilst a fourth portion was subjected to "sweating" in a malt kiln. Plots, each two acres in extent, were sown with the treated seed, whilst a fifth plot of one acre sown with untreated seed served as control. The results were assessed by counting the plants with smutted ears growing in the six outside rows along each side of each plot, the area thus covered by each separate count being, roughly, one-tenth of an acre. The formalin treatment proved completely successful, whilst the treatment with copper sulphate, though less effective, greatly reduced the extent of the attack. On the other hand, neither "sweating" nor the treatment with Bordeaux mixture afforded any measurable protection.

THE depressing effect of weeds upon the growth of accompanying crops has in the past been commonly regarded as either an effect of competition for the available soil nutrients or a shade effect, although in recent years increasing support has been given to the view that toxic excretions from the roots may play a very great part. This latter view receives little support, however, from the experiments carried out at Rothamsted during the last four years by Dr. Winifred E. Brenchley, the results of which are summarised in the March issue of the *Journal of the Board of Agriculture*. Pot- and water-culture experiments, in which poppy, spurrey, blackbent, and charlock have been grown separately and together with wheat and barley under varying degrees of competition, have shown that the association of any of the weeds with wheat had a great influence upon the growth of both, the results varying according to the species of weed introduced. The presence of extra wheat plants produced an effect similar to that of weed plants, the depreciation in individual growth being indeed, in some cases, much greater than was caused by the weeds. From a survey of the whole series of experiments it seems probable that the essential factor in the relation of crop with weed is that of competition for food, space, and light rather than that of toxic excreta from the roots. The mere competition of plant with plant, irrespective of species, has much to do with development, the chief factors involved being the time and duration of competitive check. The possibility of toxic action cannot be ruled out entirely, but it is evident that any such action is easily masked by the many other factors of competition, such as root interference, crowding of aerial parts, and deficiency of plant food.

THE late Prof. F. E. L. Beal attained a world-wide fame as the result of his minute studies on the food and feeding habits of wild birds, and in the recently issued Bulletin No. 619 of the U.S. Department of Agriculture, treating of the food habits of the native swallows, his reputation is fully maintained. The paper is characterised throughout by ripe experience, scrupulous detail, and a broad grasp of the subject. The stomach contents of the seven species dealt with have been carefully examined, 2030 specimens being utilised in determining the nature of the food, and, as was to be expected, they prove, in their relation to man, to be as harmless as any family in the bird kingdom. They are practically wholly insectivorous, the major portion of their insect food consisting of injurious species. In only a single species, the tree-swallow (*Iridoprocne bicolor*), was there any appreciable amount of vegetable matter; here it reached 19·5 per cent., and consisted chiefly of the fruit of the bayberry and a few weed seeds. Curiously, in this species Diptera form the largest item of the food, viz. 40·5 per cent.; these were taken throughout the year, the highest percentage (89·5) being reached in November. The relative proportions of the different elements of food of the seven species were as follows:—Weevils, 4·2; other beetles, 11·8; ants, 9; other Hymenoptera, 16·7; Hemiptera, 17·2; Diptera, 26·9; Lepidoptera, 2·7; Orthoptera, 0·4; other insects, 7·8; other animal food, 0·3; vegetable food, 3 per cent. On the whole, we may say that the bulk of the food consists of beetles, Hemiptera, Hymenoptera, and Diptera. Lepidoptera are only sparingly eaten, the larvæ not being readily taken on the wing. From time immemorial these birds have been of the greatest economic importance to man; indeed, it is questionable if there is any other family of birds so wholly and directly useful to mankind, and their strict preservation should be a duty of every State.

SOME Chinese contributions to meteorology are described by Co-Ching Chu in the *Geographical Review* (New York: American Geographical Society, February, 1918). Although several meteorological instruments had been invented and weather proverbs are numerous, systematic study of meteorological problems appears to have been introduced only with the Western sciences. The kite was known at a very early date, probably about four centuries before Christ, but was only employed in warfare and not for meteorological observations. Chang Hun, who invented the seismograph, lived from A.D. 78 to 139. He also calculated π to be the square-root of 10. Wind vanes are occasionally referred to in Chinese writings, as also rain gauges, but the earliest references to the latter are in Korean writings (A.D. 1442). Evidence shows that the Chinese had discovered the magnetic compass at least 700 years before its use by Columbus. Sun-spots were observed in China from 28 B.C. onwards, and are described as visible to the naked eye in A.D. 321. On the other hand, the thermometer and hygrometer were first introduced into China by Ferdinand Verbiest (1623–88), a disciple of Tycho Brahé, the instruments in question being an air thermometer and a hygrometer of gut, which Verbiest himself invented.

PROF. R. S. LULL discusses (*Amer. Journ. Sci.*, vol. xliv., p. 471, 1917) the alleged "sacral brain" of Dinosaurs, an enlargement of the spinal column that has been specially studied by him in Stegosaurus. In spite of Branca's contention, he feels that no unusual function can be ascribed to such enlargements, other than "the normal one of transmission and reflex action in an unusual degree." The discussion involves interesting remarks on the mode of life of the large Dinosaurs.

AN interesting review of field observation and laboratory work on the problems of dynamic metamorphism in rock masses is given by Sir Jethro Teall in the Proceedings of the Geologists' Association (vol. xxix., p. 1, 1918). The famous Scourie dyke is again considered, and the flow of the Lizard rocks under pressure is imitated experimentally in blocks of heterogeneous clay.

AN important memoir by Messrs. A. S. Kennard and B. B. Woodward on "The Post-Pliocene Non-marine Mollusca of Ireland" appears in the Proceedings of the Geologists' Association (vol. xxviii., p. 107, 1917). The authors conclude that, "with the exception of two or three species which may have been accidentally introduced by man, all the species existed in Ireland in pre-Glacial times and survived the Glacial period." The Chara deposits often found beneath peat are held to indicate a warm epoch, when they were formed in shallow meres liable to desiccation in the hot summers. Under such conditions the plants become white and brittle, and break up to form a "marl." The raised beaches of the north-east belong to the same epoch. A damper time followed; but the cold epoch postulated in Prof. F. J. Lewis's series is not recorded by the mollusca. A just tribute is paid to the unflagging work of Mr. R. Welch, of Belfast.

THE *Boletin oficial de minas y metalurgia* publishes a report on the mineral production of Portugal (quoted in *Le Génie Civil* for April 27). The minerals exploited have been particularly uranium (1307 tons), wolfram, tin, copper, and iron. The total production of metals in Portugal in 1914 was only 455 tons, as against 845 tons the previous year.

Elektrotechnik und Maschinenbau for October 24, 1917, describes new types of platinum-iridium thermocouples for recording rapid changes of temperature. One type consists of wires 0·02 mm. in diameter, in the proportion of sixty-five parts platinum and thirty-five parts iridium. The maximum range of the combination considered is 1850° C.

IN the *Zeitschrift des Vereines deutscher Ingenieure* for December 8 last, Max Berlowitz discusses the improvements that have been made in the design of micromanometers. He also gives a detailed description of a recent instrument invented by Rosenmuller, which has the great advantage of a fixed zero. The author also describes a new method of standardising the micromanometer, and gives a table of simplified calculations for use with the instrument.

PROF. DOELTER, in *Die Zeit* (March 13), describes the phosphate deposits of the Ukraine. These deposits occur in the Silurian formation, chiefly in Podolia and Bessarabia, and also to a great extent on the banks of the Dniester and the Ladova, where it is obtained in lumps. The mineral is phosphorite, and contains considerable calcium phosphate, which yields 27½ per cent. of phosphoric acid. There are numerous phosphorite deposits in other districts.

A GERMAN patent has been granted (*Elektrotechnik und Maschinenbau*, April 25, 1917) for manufacturing electric condensers by covering a surface of metal with an elastic medium that adapts its shape to that of the metal. The tissue is then impregnated with a substance to render it dielectric, and a second sheet of metal forms the other plate. German Patent No. 291,923 (*Zeitschrift für Mechanik und Optik*, February 1, 1917) describes a condenser formed by a glass dielectric upon which a very fine film of lead is squirted.

MESSRS. BLACKIE AND SON, LTD., are publishing in two volumes, under the title of "Applied Optics: The Computation of Optical Systems," an edited translation, by J. W. French, of Steinheil and Voit's "Handbuch der angewandten Optik." Vol. i. is ready. Vol. ii., which is in preparation, will deal with the determination of refractive indices and dispersions and the computation of achromatic prisms, with the computation of doublet objectives; also with the discussion of the aberrations of different combinations. In addition, it will contain appendices on "The Determination of the Refractive and Dispersive Powers of Various Media" and on "The Trigonometrical Formulæ for the most General Case of the Refraction of Light by a System of General Surfaces."

OUR ASTRONOMICAL COLUMN.

NOVA MONOCEROTIS.—Additional particulars of the new star in Monoceros, which was discovered by Wolf on February 4 (NATURE, vol. ci., p. 52), are given in *Popular Astronomy* for April (vol. xxvi., p. 282). The position of the star for 1918·0, as determined by Prof. Barnard, is given as R.A. 7h. 22m. 46·93s., decl. $-6^\circ\ 30'\ 34{\cdot}7''$. According to observations made at the Lick Observatory, the spectrum has reached the nebular stage, consisting of extremely broad bright bands of hydrogen, with the nebulium lines moderately strong and absorption near the centres of the green bands. Photographs taken at Harvard on February 21 show the bright hydrogen lines α to ζ, and bright lines also appeared at wave-lengths 4363, 4520, 4686, 5007, 5440, 5630, and 5750.

THE ATOMIC WEIGHT OF "NEBULIUM."—In a more complete investigation of the periods of vibration of a single-ring atom, taking account of the magnetic and associated mechanical forces on an electron due to its motion, Prof. J. W. Nicholson has made a more precise calculation of the atomic weight of "nebulium" (Monthly Notices, R.A.S., vol. lxxviii., p. 349). Adopting Wright's values for the two lines λ 5006·89 and λ 4363·37, it results that $m/M = 0{\cdot}000415$, where m is the mass of the electron and M that of the atom of nebulium. Since the mean of the best determinations of the corresponding ratio m/H for the hydrogen atom is 0·000545, it results that the atomic weight of nebulium is 1·31, the possible error being unity in the last figure. From observations of the limiting order of interference for the line λ 5007, Prof. Fabry had previously shown that the atomic weight was probably between those of hydrogen and helium.

HYDERABAD ASTROGRAPHIC CATALOGUE.—The work on the astrographic catalogue at the Nizamiah Observatory, Hyderabad, has been carried on with extraordinary vigour since the appointment of the present director, Mr. R. J. Pocock, in 1914. The seven zones from 17° to 23° south declination were originally assigned to the Santiago Observatory, but on account of the long delay in commencing operations the Hyderabad Observatory was afterwards invited to undertake the zones -17° to -20°. Little was done before Mr. Pocock took charge, but the telescope was got into working order and regular work on the catalogue commenced in December, 1914. The first volume of the catalogue has just been issued, comprising measures of rectangular co-ordinates and diameters of 63,436 star-images on plates with centres